The Navy & Marine Corps Aviation Maintenance Safety Magazine

Mech

Fall 2006

In This Issue:

Mudding in Maryland

Combustible FOD

Are We Good or Lucky?

THE NAVY & MARINE CORPS AVIATION MAINTENANCE SAFETY MAGAZINE

Mech

Vol. 45, No. 4 Fall 2006

RADM George Mayer, Commander, Naval Safety Center
Col. James Jamison, Deputy Commander
John Mahoney, Head, Communications and Marketing Department
Naval Safety Center (757) 444-3520 (DSN 564)
Dial the following extensions any time during the greeting

You can e-mail any staff member by using their first name.last name@navy.mil, except as noted.

Mech Staff
Dan Steber, Editor **7247**
danny.steber@navy.mil
Patricia Eaton, Graphic Artist **7254**
Publication FAX (757) 444-6791

Aircraft Maintenance & Material Division
LCdr. Bert Ortiz, Division Head **7265**
Capt. Chris Foley, USMC, Assistant Division Head **7223**
AFCM(AW) Mark Westmoreland, Maintenance Master Chief **7285**
mark.a.westmoreland@navy.mil
AFCM Johnnie Simmons, Maintenance Master Chief **7269**

Airframe/Powerplant Branch
CWO2 John Kukahiko, Branch Head **7293**
ADCS(AW/SW) Mike Tate, Maintenance Analyst **7290**
ADC(AW/SW) Gary Eldridge, Maintenance Analyst **7218**
AMC(AW) Paul Hofstad, Maintenance Analyst **7224**

Support Equipment
ASCS(AW) Phil LeCroy, Maintenance Analyst **7291**
lyman.lecroy@navy.mil

Avionics/ALSS/Analyst Branch
CWO4 Ron Stebbins, Branch Head **7278**
PRC(AW) Brian Westcott, Maintenance Analyst **7219**
AEC(AW/SW) Matthew Cooper, Maintenance Analyst **7275**
AMEC(AW/SW) Ellen Darby, Maintenance Analyst **7292**

Ordnance
GySgt. Lorienzo Garner **7140**
AOCS(AW/SW) Ron Carpenter **7171**

Analysts
AZCS(AW) Steve Miller, Logs and Records **7244**
SSgt. Cristina McWilliams **7074**

Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This command's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is dangerous and demanding enough. The time to learn to do a job right is before combat starts.

Mech (ISSN 1093-8753) is published quarterly by Commander, Naval Safety Center, and is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the U.S. Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author. Periodicals postage paid at Norfolk, Va., and additional mailing offices.

POSTMASTER: Send address changes to *Mech*, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399.
Send articles, BZs and letters to the address above, or via e-mail to the *Mech* staff, SAFE-Mech@navy.mil. Visit us on-line at www.safetycenter.navy.mil.

After many years of supporting the Communications and Marketing Department at the Naval Safety Center, Ginger Rives has retired. Ginger handled the distribution and postal requirements for all our magazines, along with filling all your orders for posters, special items, and printing. We were fortunate to have her on our team, and wish her well.

Thank you, Ginger, from the Navy and Marine Corps safety team.

On the Cover:

An Aviation Machinists Mate assigned to the "Saberhawks" of Helicopter Anti-Submarine Squadron Light Four Seven (HSL-47), performs final maintenance prior to the flight of an SH-60B Seahawk helicopter aboard the *Nimitz*-class aircraft carrier USS *Abraham Lincoln* (CVN-72).

Navy photo by PH3 Tyler Clements

Features

Departments

Coming Soon

24/7 Holiday Planner

email: safe-pao@navy.mil

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION
01 October 2006
The United States Postal Service requires all publications publish a statement of ownership, management and circulation.

Date – 01 October 2006
Title of Publication – Mech
ISSN – Publication No. – 1093-8753
Frequency of Issue – Quarterly

Location of Office of Publication
Commander
Naval Safety Center
375 A Street
Norfolk VA 23511-4399

Publisher – U.S. Navy
Editor – Dan Steber
Owner – United States Navy

Total No. Copies Printed – 16,364
No. Copies Distributed – 16,114
No. Copies Not Distributed – 250
Total Copies Distributed and Not Distributed – 16,364
Issue Date for Circulation Data Above – Summer 2006

Sneaking Acros

By AMC(AW) Patrick Curl

During a spring and summer deployment, my EA-6B Prowler squadron split operations between the carrier and a forward air base in Iraq. Half of our maintenance department was based ashore, with the rest remaining aboard ship. I've always heard that having a lax attitude can lead to a series of unfortunate events. I would face that problem before I realized it.

Our squadron was fortunate because a Marine air wing deployed in Iraq was fully up and running, including full ground and AIMD support on station. Although the maintenance-support structure at the base already was in place, we faced numerous challenges every day to meet our flight schedule. As with every foreign-deployment site, nearly every procedure has to be developed from scratch. Some procedures or functions already are established and become routine. Even though you've operated at a base for a couple of months, occasionally you'll find procedures that you didn't realize existed and now are getting ignored.

Since our squadron was split, we usually had only two jets on station at any time. The missions our aircrews were flying were, at a minimum, three and a half hours long, and sometimes they would go as long

I've always heard that having a lax attitude can lead to a series of unfortunate events.

s the Taxiway

as seven hours. Every mission was to support combat operations on the ground, and it was critical that every sortie went. It therefore was essential for ground support to be timely and reliable. During the daily routine of launching and recovering aircraft, we would have to keep the ground support equipment (GSE) in a ready and serviceable status.

The aerodrome area at the air base was huge. Most of the airfield facilities, including the GSE issue and receipt facility, were located on the north side of the two 12,000-foot runways. Our hardened aircraft shelter (HAS) was on the south side. The most direct route from our HAS to the GSE facility was directly across the runways and taxiways. Like most airfields, radio communication is key to safely transiting the runway environment. However, at that particular base, it's not always dependable, even for aircraft, because of the sheer size of the place and because the temporary U.S. military air traffic-control equipment is not optimum for that field. There was an alternate route using base roads, but that trip takes twice the time to get to the GSE facility.

During an unusually action-packed day of flying, we had to send a couple of our line maintainers over to GSE. Per our standard practice, they drove out to the taxiway and attempted to contact ground control for permission to cross the runways and taxiways. After multiple unsuccessful attempts to reach ground, they contacted me about the problem and were looking for assistance.

I was on duty at maintenance control and rushed my decision, telling them to wait for another vehicle to cross and to follow it. That was my quick fix, and the beginning of an unofficial standard operating procedure. Over the next few days, it quickly passed from one person to another in the command as "what the chief instructed us to do." What I didn't consider while making this decision was that I was ignoring airfield-transit instructions that are in place for the safety of personnel and aircraft. I also didn't consider that the vehicle they chose to follow might not have had permission, either.

We were fortunate during those few days that no maintainers were endangered, and no equipment was damaged. It also was a blessing that someone else had the situational awareness to point out the error of my decision, and the SOP that had developed. Once notified, we ended the practice right away.

This situation will remind me constantly that as a maintenance chief my direction can affect the safety of the personnel and equipment. I chose to pass out bad gouge, which turned into training for the personnel and for me. I am responsible for my Sailors, recognized my mistake, and ensured the troops in my squadron understood the proper way to transit the taxiways. I learned the hard way that wanting to do a good, quick job doesn't mean rushing your decisions.

Chief Curl wrote this story while assigned as a det maintenance chief at VAQ-139.

Mudding in Maryland

By AT2 (AW) John Srader

It was a beautiful, sunny day, and my shop, work center 210, had line duties for the week. Maintenance control called and directed us to move aircraft 774 down to the sea wall for ground testing. This great day was about to turn dark and ugly.

We organized the move crew and towed the aircraft out of the hangar and down the flight line. As we continued along the taxiway, we were told to hold short of all active runways and wait for several aircraft to take off. After a 20-minute wait, the tower directed us around the airfield for what seemed like a tour of the base. Finally approaching the sea wall after a long, convoluted tow, we met the rest of the move crew.

Even though I have over five years experience towing P-3s, this was my first aircraft tow to this side of the base. I had no experience towing on such a narrow ramp—the fighter area on base.

The taxi director, a yellowshirt and second-class petty officer, was more familiar with the area, and I assumed he had done numerous aircraft moves to this side of the base. After the yellowshirt talked with the engineers about where they wanted the aircraft, we continued towing and came to a power island that ran down the center of the ramp. We started to make what looked to be about a 180-degree turn toward the sea wall, but the narrow constraints of the ramp area didn't allow much space to make the sharp right-hand turn that was required to get the nose pointed seaward.

Everything had gone smoothly to this point, but I had a sinking feeling that I was going to have to pull onto the grass as the yellowshirt directed me forward.

Sure enough, the move continued, and I had pulled about halfway onto the grass before being directed to stop. After the tow bar was disconnected, I pulled the Buddha forward a little. With the back wheels no more than 6 inches off the ramp, I had that sinking feeling again, but, this time, it was for real. I immediately put the tractor in reverse, but it was too late. The 50,000-pound piece of equipment sunk right through the wet sandy ground like a hot knife slicing through butter.

I jumped out of the tractor before it was buried completely, and the rest of the move crew gathered around to make sure I knew what I had done. Another crew member jumped in and tried unsuccessfully to rock the tractor out of the mud. In fact, that action actually made it sink deeper.

To make a long story short, maintenance control was notified, and they contacted the air station's public works department for a wrecker crew. A few hours later, they showed up with their wrecker and finally got the Buddha out. Of course, I wasn't done, yet. The director and I were given some very effective EMI—we had to scrub down the Buddha before driving it back to the hangar.

As an experienced yellowshirt and tow-tractor driver, I should have known it would sink into the ground. We had received a lot of rain the day before, making the ground softer than normal. An on-the-spot risk assessment would have allowed us to take a second look at what we were doing and would have saved us a lot of trouble. I also had relied on someone else, instead of stepping up myself. I had become too lax and trusting.

I should have used the squadron's "no vote" policy to stop the move *[program allows Sailors to stop any evolution without a vote. — Ed.]* and to do my own assessment, but I didn't. I had assumed everything was fine, but it clearly wasn't. I'll never again assume anything. If you have that sinking feeling, trust your instincts.

Petty Officer Srader is assigned to VP maintenance division, Air Test and Evaluation Squadron Two Zero (VX-20), NAS, Patuxent River, Md.

Combustible FOD

By Anonymous Maintainer at VAW-117

The job was easy: Paint a metal sign for an air show. I took my materials, spray paint, a sheet of metal, and a drop cloth to keep the paint off the deck in the hangar. Sounds simple and should have been, but I ended up with the scare of a lifetime.

I began spraying the sign, making sure to get a good even coat. Unfortunately the wind blew some of the spray paint onto the deck, but it wasn't a big deal. I knew I could just get some alcohol-based thinner and wipe up the paint. Again, it sounds easy enough. Well, apparently it wasn't easy. As I began that job, I forgot the first principle everyone learns when they begin their career in naval aviation: De-FOD yourself before beginning a task.

As I scrubbed the deck and began getting up the paint, one of my friends came over to talk. I stood up and continued the conversation. This is when I realized my mistake. I had forgotten to remove my lighter out of my pocket. I didn't think it was a big deal. I just would finish the job and take my lighter back up to the shop. It was small, and no one ever would know. That was my second mistake.

As my friend left to finish his work, I removed my hand from my pocket, accidentally pulling my lighter out with it. All it took was a small spark to ignite the alcohol thinner lying in puddles on the deck. Before I could react, the fire had spread to the entire six-foot area that had thinner on it. The flames were over my head! My panic and fear only heightened as the fire alarm went off and people began coming out of their shops to see what had happened. The last thing I heard walking out of the hangar was a loud pop as the AFFF stations went off.

The hangar AFFF system extinguished the fire before anything was damaged or anyone got hurt. Fortunately, the hazardous material containers, which were only seven feet away and full of paint, thinners and engine oil, did not ignite. Similarly, the fire didn't reach an aircraft with an open fuel cell parked in the same hangar.

This whole problem could have been prevented with a simple check of my pockets for FOD before I began my task. I should have taken time to put the job on hold once I realized my lighter was in my pocket. FOD prevention is stressed so much, but I took a carefree attitude about it, thinking that it wouldn't be a problem with me.

My near-mishap is a simple example of how something so small can cause a serious problem in a heartbeat. I was fortunate things weren't worse, and the incident cost only a little time and effort to clean up the AFFF in the vicinity of the fire.

I've known people who would use a lighter to burn off excessive flammables, rather than wipe up the liquid and worry about disposing of the hazwaste. I hope that wasn't the case in this incident. There's only one way to do any job and that's the right way. Shortcuts only lead to bigger problems.—Ed.

Is That Jello in My F

By Lt. Joshua Hensley

uel Sample?

"You never know what you might find in a fuel tank." That was the lesson learned by AE3 Rebecca Hayes and AM3 Wayne Shockley as they performed the daily inspection on Bayraider 43.

The squadron just had received clearance to use the Robinson internal auxiliary-fuel tanks for the MH-60S. The tanks significantly improved the helicopter's capabilities, but the related servicing and maintenance procedures were new to everyone. After drawing a fuel sample from a newly installed tank, Petty Officer Hayes noticed a "jelly-like substance" settling to the bottom of the jar. She immediately showed AM3 Shockley, who agreed that something wasn't right—the sample definitely was contaminated.

Few things are more unsettling in helicopter aviation than the specter of flying with bad fuel. If the engines flame out from contamination, aircrews often have no choice but to ride the aircraft down to the water and hope for the best.

These vigilant plane captains immediately notified a quality-assurance representative, who confirmed the diagnosis. Samples drawn from aux tanks in other aircraft on the line revealed the same pattern of contamination. Oil-lab analysis showed that the foreign substance indeed was petroleum jelly. Further investigation determined that excessive amounts of petroleum jelly had been applied to the rubber seals in the test kits to prevent dry rot during shipping.

Three important lessons can be learned from this incident:

Attention to the detail. The line division does dozens of daily and turnaround inspections during the course of a month. A good plane captain never assumes the next inspection will be just like the previous one *(they ask the question…what is different today—Ed.)*. The petroleum jelly that Petty Officer Hayes found was the same clear color as the fuel and easily could have been missed had she given the sample jar only a cursory glance.

We all develop routines, which is good because it helps us develop a comfort level with our work and know when something is out of place. But no one can allow a routine to breed complacency. When that happens, it leads to mistakes, and, in our business, mistakes can cost lives.

Get a second opinion. Truth is found in the old saying, "if it doesn't look right, it probably isn't." A second opinion often will confirm initial suspicions, which was the case with this fuel sample. None of us have all the right answers all the time, but, collectively in our work centers and squadrons, we have vast amounts of experience. Chances are someone has seen or dealt with the same issue before. If we fail to use one another as resources, we never will perform as effectively as we should. And of course, never be afraid to bring QA into the loop. An impartial observer often can step back and provide better perspective on potential problems.

Take your time when working with unfamiliar equipment. The fleet continues to see new and upgraded gear to enhance our capabilities and make our jobs easier. When new equipment arrives at your work center, take the time to familiarize yourself with its capabilities and the procedures for its use. Again, the plane captains in this example were using the sample kit for the first time, but, because they had taken time to learn how to use it correctly and followed proper procedures, they were able to identify and diagnose a serious discrepancy.

We never know when our actions might have a big impact. In the case of this discovery, the impact was fleetwide. Within days, a technical directive was issued, requiring a one-time disassembly and inspection of all MH-60 internal fuel-tank sampling kits. As a result of Petty Officer Hayes' and Shockley's diligence, attention to detail, and teamwork, a potentially deadly hazard was identified and corrected.

Lt. Henley flies with HSC-28. He also wanted to thank AMC Weinrich, AE3 Hayes, and AM3 Shockley who contributed information for the article.

MAINTAINERS IN THE TRENCHES

Aviation Ordnancemen assigned to the "Bulls" of Strike Fighter Squadron Three Seven (VFA-37), mount inert training bombs to a weapons rail under the wing of an FA-18C Hornet before flight operations aboard the *Nimitz*-class aircraft carrier USS *Harry S. Truman* (CVN-75).
Navy photo by PH3 Kristopher Wilson

An Aviation Boatswain's Mate directs the driver of a tow tractor as he backs a U.S. Marine Corps UH-1N Huey helicopter to its parking space on the flight deck of the amphibious assault ship USS *Peleliu* (LHA-5).
Navy photo by JO2 Zack Baddorf

Aviation Support Equipment Technicians assigned to the amphibious assault ship USS *Boxer* (LHD-4) review a publication before testing an aircraft hydraulic servicing unit.
Navy photo by MC3 Noel Danseco

Flight-deck personnel carry an aircraft barricade in preparation to re-stow it after a firefighting drill on the flight deck aboard USS *Kitty Hawk* (CV-63).
Navy photo by MC3 Jared Benner

Chief, I Cut Myself!

By AN Alvin Roley

It was a rare, cold morning at NAS Lemoore, as I started my workday. I reported to the line shack and received a passdown of the day's workload. Christmas was a week away, and we were only two weeks away from deployment.

The squadron's flight schedule was full, with our pilots preparing to return to the carrier. As a plane-captain trainee, I was assigned the job of servicing our Super Hornets' hydraulic systems. It would be a long day.

As the flight schedule progressed, the jets began returning from their training flights. Following normal maintenance practices, I serviced the hydraulics on each aircraft after it shut down. I was using a standard PON-6. After servicing the first five aircraft, the PON-6 nearly was empty; it was time to refill the reservoir. A fellow plane-captain trainee went with me to do the job so we would have enough time to finish the post-flight maintenance before a holiday safety stand-down started.

We made our way behind the power plants shop to the hazmat locker. To expedite the task, we made a deal: He would open the cans of oil, and I would pour them into the PON-6. As he opened the cans and I filled the reservoirs, some of the lids didn't come off completely. To speed things up, I decided to pull off the lids with my hands, while wearing only flight-deck gloves.

The hazmat locker had a pair of double-palmed leather gloves and a pair of Nitrel gloves, but I decided not to use them. The leather gloves were oil-soaked. The Nitrel gloves go on under the leather gloves to protect your hands from the oil.

One can's lid was hard to remove, so I tried to get a better grip. When I did, I pressed down too hard and cut through my gloves. I suffered a deep cut to the inner part of my hand, between the index finger and thumb. The pain was intense and immediate.

Upon removing my glove, I saw a lot of blood and went to rinse off my hand at the nearest sink. I quickly realized I needed help. I went back to the line shack and told my chief the whole story. He immediately sent me to the base urgent-care clinic, where I received six stitches but learned I didn't have any permanent damage to my hand.

Upon my return to the hangar, the squadron safety officer and the safety petty officer were happy to hear the injury would heal, but they were curious to hear how it had happened. I felt awkward revealing the details because I knew I was at fault. I had misused PPE. I also felt bad for letting down my shop; I spent two critical weeks on light duty.

I took away three important lessons:

- PPE is available to prevent injuries or to lessen the severity of an injury.
- If something is wrong with the PPE provided, or if you have questions about it, ask your chain of command. They will support you and get serviceable equipment.
- Always be careful when dealing with sharp pieces of metal.

Don't be stupid—always follow the rules, and be careful, especially when doing simple tasks.

Airman Roley is a plane-captain trainee at VFA-115.

Dropping Racks

By Cpl. Richard Mendez, USMC

It was a cold night in Iraq's Al Anbar Province, and Cobras and Hueys were launching left and right, all night long. We watched as the birds departed Al Taqaddum Air Base and disappeared into the night to support various ground units. Things had become routine—too routine.

The ordnance shop was working well together. We nearly were two-and-a-half months into our seven-month deployment and were becoming comfortable with the nightly events. The operational tempo was higher than anything I had experienced, but I was sure of my responsibilities as an ordnance team leader. I worked night shift the entire time, and I was feeling pretty salty on my second tour in Iraq.

Between the aircraft launches and recoveries, we continued to press with our maintenance effort. With 20 AH-1W Cobras and another 10 UH-1N Hueys on the flightline, we had enough work, but the routine had made us complacent.

We received a radio call from maintenance control, telling us to download a Cobra so other work centers could complete some maintenance tasks. All available ordnance Marines reported to the aircraft for the download. Once the Marines doing maintenance were done, we prepared to reload the aircraft—as soon as the call came from control.

A pair of high-time bomb racks needed to be removed and routed to the Intermediate Maintenance

in Iraq

It's critical to make sure the cockpit, aircraft and test equipment are ready before ground checks.

Activity (IMA) for a scheduled inspection. Maintenance control told us the racks needed to be removed quickly because the aircraft would be on immediate strip alert that night. A few Marines stayed to watch the ordnance, while the rest of our crew gathered the required gear and tools and headed to aircraft 41.

We went to work removing the BRU-23 rack from station No. 3 and installed a new bomb rack. Because both racks had to be replaced, we moved an empty LAU-68 rocket launcher from station No. 2 to station No. 3, allowing us to remove and replace the other rack, as well. A call suddenly came over the radio to send an arm/de-arm crew to the hot fuel pits immediately. I assembled a qualified crew, and they quickly headed to the pits, located half a mile or so away. With the de-arm crew in the fuel pits, the remaining ordnancemen continued to remove the remaining rack from station No. 2. We almost were finished when we received another call from control, telling us we needed to finish up and make sure the Cobra was safe for flight.

We did that task, took an inventory of our tools, and left. Control said they would call us back to let us know when we could install the other BRU rack. We made our way back to the Cobra we had downloaded to see if it was ready to be reloaded; however, other shops still were busy working on various systems.

I noticed two ordnance Marines heading toward aircraft 41 with the new BRU rack. I thought to myself, "I must have missed the call from control," deciding to assist the Marines with the task to finish quickly. With the installation complete, only an operational check of the jettison system remained. I climbed into the rear seat of the Cobra to set up the switches for this check, just like I'd done hundreds of times before. After directing the other Marine with me to set up the AWM-102 test set and to tell me when he was ready, I

Before using a test set for jettison checks, remove the cartridges.

turned on battery power and started pushing the jettison button. My partner said he didn't get the correct display on the test set, so I climbed out of the cockpit to verify the test set was connected properly. It was, so we decided to check it again.

This time when I pressed the jettison button, I heard a pop that sounded like a panel had fallen off the other side of the aircraft. We went to investigate, and, as we came around the side, we could smell gunpowder. That's when I realized I had not removed the cartridge-actuated devices (CADs) from the aircraft. We checked all four stations to see how many CADs were expended and verified that three of the six CADs installed on the aircraft had discharged.

The racks had safety pins installed or were locked to prevent jettison, so no launchers came off the aircraft. Looking back at my actions, I realize the mistakes that led to this incident. I did not have a quality-assurance safety observer verify the helicopter was not loaded before our operational checks. I also did not have the required checklists.

I never thought something like this ever would happen to me, but it did. I've always been a professional and have done by-the-book maintenance. On this day, however, my actions could have resulted in serious injury had someone been near the racks when those CADs went off and had the safety pins been uninstalled.

Because of our high operational tempo, I was lulled into thinking I could cut out required steps and procedures to save a couple of valuable minutes. Instead of saving time, I created more work for everyone. We had to inspect and clean the racks, fill out reports, and take care of additional paperwork. I was held responsible for my actions and learned the hard way about following maintenance procedures.

Cpl. Mendez works in the ordnance shop at HMLA-369 and currently is deployed in Iraq.

Good

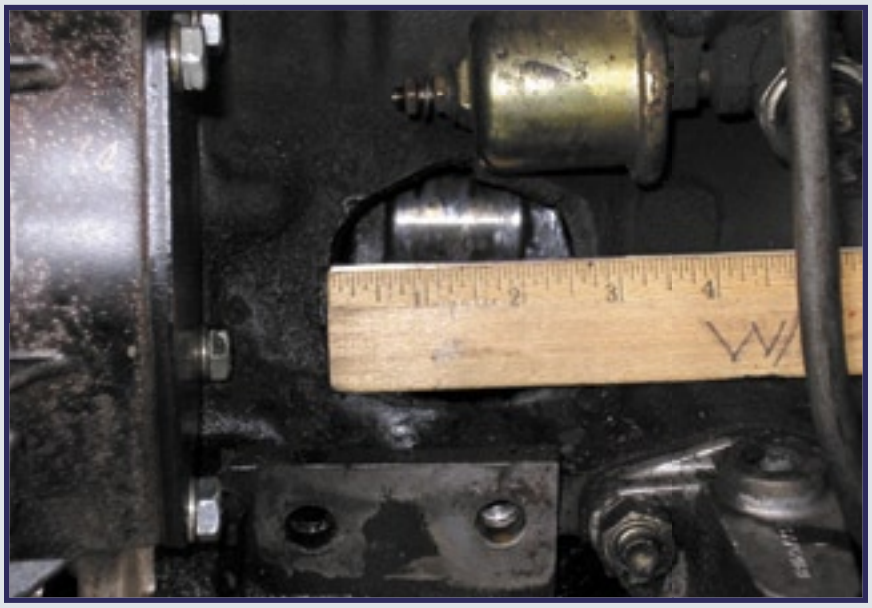
Even simple tasks demand you wear protective equipment. Ask the question, what is the worst thing that could happen? And plan accordingly.

Bad

Dragging a hose while moving a cart or moving it across a rough surface can be dangerous. Check hoses before using.

Ugly

Running a piece of support equipment with no oil can lead to a problem like this 3-inch hole. Do required inspections and service equipment correctly.



Are We Good or Lucky?

By AME2(AW) Petra Freund

Knowing aircraft systems and associated lights is critical to safe maintenance.

With two days left before an upcoming boat detachment, we had lots of work left to do. It was late in the day, and my shop was called for an all-hands turn on aircraft 301. Little did I know the aircraft would need a lot more work before the day was over.

The AE1 doing the low-power turn completed his walkaround and climbed into the cockpit. After completing switch checks and before turning on the battery, he made sure all fire lights were reset. After turning on the battery, he noticed the ready/discharge light was illuminated. He immediately turned off the battery and notified the AME shop.

The presence of this light indicated that our fire-extinguishing system was armed and ready to discharge the bottle. Having seen this anomaly on other occasions, I didn't think a lot about it and started troubleshooting the gripe. No, I didn't bring a pub with me, as you probably guessed, and that fact turned out to be crucial.

While troubleshooting from the hip, I had my AME3 make sure the AE1 had turned off the battery and reset the switches. I then pulled the circuit breaker to reset the system. We had the AE1 turn on the battery, again, to see if the system had reset. It hadn't. After being assured that the battery was off again, I tried to test the system once more. As I pulled the circuit breaker, we heard a loud pop. I immediately knew that we had inadvertently set off the fire bottle. Finally getting the ready/discharge light reset, we headed into maintenance control.

As you can imagine, the next couple of hours were utter chaos. I had to explain what had happened to maintenance control, place an emergency CAD order to replace the expended ordnance, remove the fire bottle from the aircraft, and start an investigation.

After filling out my statement, I finally got to go home—although much later than expected. I spent that night wondering why I hadn't brought the pub with me. It could have saved me a lot of heartache in the long run.

The next morning, I read the pass down from night check and was relieved to see they found two of three components that disrupt power to the fire bottle had been shorted out, sending just enough voltage to the system to set off the CADs.

Although a short was found to have caused this incident, I learned I had become complacent even with years of experience with resetting ready/discharge lights. I simply didn't take the job seriously, as I should have. It had become routine for me to just reset everything. No one was hurt in this mishap, and the monetary damages were small. However, the chances of someone getting injured is always present, especially when dealing with explosives. The No. 1 lesson I learned from the whole ordeal was to always use the pubs. It can mean the difference between fixing a discrepancy the correct way or causing injury, damage, or a lot more work.

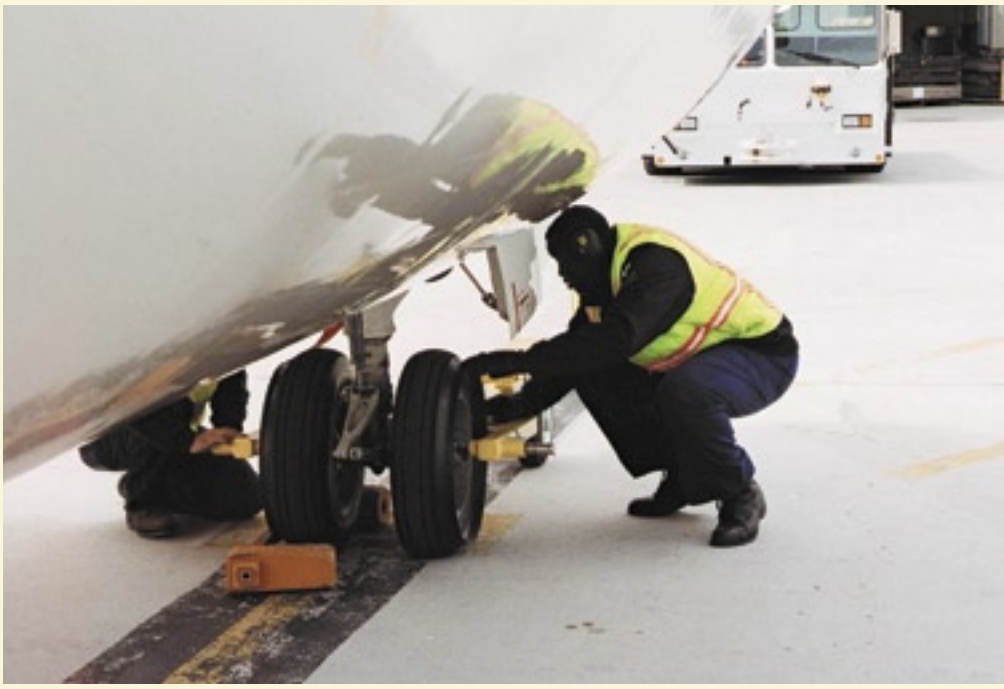
Reflecting on both the successes and the close calls of the past year, my skipper asked each of us to ponder, "Are we good or simply lucky?" I'd prefer to depend on being good.

Petty Officer Petra Freund works in the AME shop at VFA-113.

Taking a Shower in Skydrol

By Anonymous Maintainer at VR-56

Removing and replacing a brake assembly on an aircraft is just one of many routine tasks that personnel do in every airframes shop. We had one that required no less caution than any other maintenance task that involves opening any pressurized hydraulic systems. Of course, we didn't pay attention.



With that situation in mind, an airman and an AM2 took most of the necessary precautions, which included bleeding the system to obtain the zero PSI reading required to disconnect any hydraulic line. They started removing the brake assembly and plugging the hydraulic lines that connect to it. In the process of installing the new assembly, the two maintainers proceeded to reconnect the lines. While taking off the plug on a brake hydraulic line, the airman's wrench slipped, and Skydrol hydraulic fluid splashed in both of his eyes. This problem would have been avoided had the airman been wearing his face shield, as required in the MSDS. The airman's immediate reaction was to close his eyes because of the burning sensation and piercing pain from the Skydrol fluid.

Unable to see and a bit disoriented, he pried open one eye, despite the pain, and located the AM2, who immediately drove him to the nearest eyewash station. A QAR assisted with the injury and documented the mishap. The command drove the airman to medical where he was treated and released the same day.

Skydrol is highly corrosive and could have caused permanent damage, but the rapid medical care saved the airman's sight. He returned to work the following day with no permanent damage.

Sometimes the simplest, most routine tasks are the most hazardous because people often become complacent and ignore the required precautions. Always wear PPE, and make sure people around you do, too. Your life and eyesight may depend on it.

Saving Time and Money With New Support Equipment Trainers

By David Turner

Aviation Support Equipment "A" School teaches a wide variety of trades, ranging from tire-and-wheel maintenance to troubleshooting complex electrical equipment using schematics and wiring diagrams.

When the school started in 1966, it used NC-8 mobile electrical power plants (MEPPs) for the advanced training in the electrical field. These NC-8s served the school well, even long after the fleet had replaced them with more modern equipment. When problems arose in finding parts required to maintain the NC-8s, though, everyone knew it was time for a change.

A decision was made to replace the tired NC-8s with trainers, rather than use other power plants that actually are used in the fleet. The theory behind this decision was that specially designed trainers would be a better solution for the students. The Navy also would be relieved of the financial burden of supplying the school with expensive support equipment.

Realizing the importance hands-on experience provides to students and the good it does to prepare them for the fleet, the school's training officer, Lt. Bryan Beecher, and staff management tasked some instructors to design a trainer that would meet the need.

AS1 Cory Bates went to work laying out a plan. He surmised that a trainer could be built to simulate the function of a MEPP—one that would allow the school to continue using the same schematic and curriculum. He first wrote the requirements for the trainer and made a blueprint of how it should look. Because he was able to incorporate

These new support equipment trainers will save money and provide safer and more effective training.

some materials already in the schoolhouse to build the trainers, he saved even more money than expected.

After contacting NavAir at Solomon's Island, Md., Petty Officer Bates started building a prototype. Unfortunately, he transferred to a new command before he could see the finished product.

Sgt. Travis Laurion stepped in and took over the task. He worked closely with a contractor, who was put in charge of building the trainers. Several e-mails and three trips to Solomon's Island ensured they were built to the original requirements Petty Officer Bates had established.

When the first trainers arrived, several bugs had to be worked out. Sgt. Laurion worked tirelessly with his fellow instructors to make sure they had a product that would meet the needs of the school and would be as reliable as possible.

AS "A" school officials have replaced the five old original NC-8s with 13 new trainers. Besides increasing the efficiency of the lab, the trainers have an added benefit: They can simulate a wider variety of discrepancies.

Flight, Flight-Related, and Ground Class A Mishaps 05/22/2006 to 09/30/2006

Date	Type Aircraft	Command
05/27/2006	AH-1W	HMLA-169
Aircraft struck water while conducting a post phase functional check flight.		
05/30/2006	TH-57B	HT-8
During fam flight, aircraft crashed into trees. Two major injuries and one fatality.		
06/16/2006	EA-6B	VAQ-129
Aircraft ran off runway on landing rollout and collapsed starboard main landing gear.		
06/26/2006	FA-18C	VFA-125
Midair collision between two Navy aircraft during local training mission—one fatality.		
07/02/2006	AV-8B	HMM-365
Aircraft crashed into water on carrier controlled approach—pilot ejected.		
09/22/2006	E-2C	VAW-123
09/22/2006	S-3	VS-32
Port stab of taxiing S-3 struck starboard turning prop of parked E-2C.		

Class B Mishaps

Date	Type Aircraft	Command
06/17/2006	AH-1W	HMLA-169
Parked aircraft was struck by forklift while positioning to lift container.		
06/22/2006	TH-57B	HT-18
During practice autorotation helo landed hard and rolled over.		
06/27/2006	EA-6B	VAQ-133
Aircraft encountered severe structural damage from hail.		
06/28/2006	FA-18C	VFA-146
CATM-88 departed aircraft during carrier arrested landing—no injuries.		
07/06/2006	FA-18A	VMFA-115
Aircraft sustained port engine damage after FOD ingestion.		
07/12/2006	UH-1N	HMLA-775
Transmission overtorque during power recovery autorotation practice.		
08/14/2006	E-2C	NADEP NOR Is
Engine FOD due to prop malfunction on maintenance ground turn.		
08/14/2006	FA-18F	VFA-106 Det A
Two aircraft damaged by possible lightning strike.		
08/16/2006	FA-18C	VFA-81
Aircraft struck bird on takeoff roll, fodding port engine.		
08/21/2006	FA-18C	VFA-81
Two similar aircraft collided during night air-to-air over-water training mission.		
09/07/2006	CH-53D	HMH-463
Aircraft had a hard landing during night operations.		
09/15/2006	E-2C	VAW-112
Starboard center wing and outer wing panels damaged during routine ground maintenance.		
09/24/2006	EA-6B	VMAQ-3
Prowler struck bird during flight. Engine damage discovered during postflight inspection.		
09/30/2006	F-18D	VMFA(AW)-332
No. 1 engine fire in flight, damaging engine, engine components and aircraft frame.		

Printed as a supplement to *Mech* from
Naval Safety Center Data
Cdr. Ed Hobbs
For questions or comments, call Dan Steber
(757) 444-3520 Ext. 7247 (DSN 564)

The old NC-8s served their purpose, but the new trainers fit the role of a transforming Navy.

The instructors now can choose from 20 different gripes that can be installed in the trainers with the flip of a switch. With the NC-8s, an instructor had to remove certain wires to make the equipment react differently so the student would realize the unit had a problem.

Students now can do a pre-operational inspection on each trainer, where, in the past, all pre-ops were simulated. This change drastically has increased student comprehension of the inspection process.

Safety also has been enhanced because of the way components are laid out and the way students are required to troubleshoot. Relays, switches, resistors, cannon plugs, and various other electrical components are much more accessible to the student, eliminating most of the shock hazard. Students also are not exposed to tight quarters with moving parts, reducing the chances of a hand or arm being dragged into a moving fan blade.

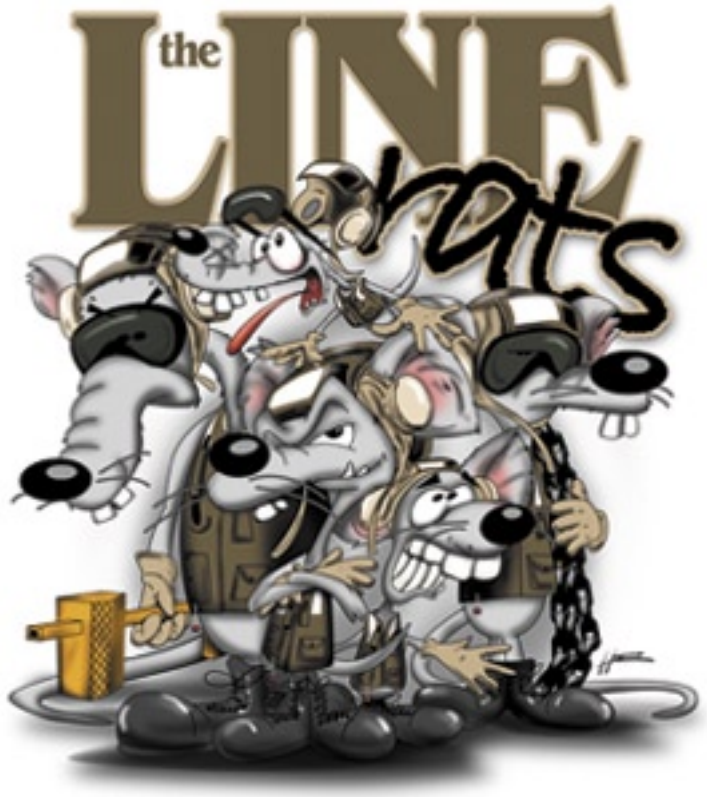
Students who already had gone through the electrical phase of AS training with the NC-8s were given an opportunity to use the new trainers. Without exception, the students said it was much easier to comprehend, troubleshoot, and retain knowledge, using the new trainers.

Instructors say they have seen increased comprehension, which allows them to further challenge the students. In turn, the students have a higher level of confidence than ever before, and the fleet and "C" schools receive workers better prepared to handle their electrical-troubleshooting responsibilities. It's a win-win situation for everyone.

Mr. Turner is a civilian instructor at AS(A1) school.

Upcoming Feature in Mech

Watch for the comic series, Line Rats, in the winter 2006-2007 issue, due out in January 2007. It promises to provide a somewhat humorous but serious look at various maintenance and safety issues.



Newton Was Right

By AT2 Baker

Substitute this component for an apple and the results are the same.

We were going through our normal morning maintenance routine, when maintenance control directed us to download a FLIR POD to complete a 14-day wash job. We normally wouldn't have to do this, but the pod was missing the optic stabilizer and the pod forward section, so the aft section had to be removed to prevent water intrusion. It should have been a simple event.

I sent the troops to gather all the necessary equipment to get the job done. They collected everything, except for one major piece of GSE: a proper FLIR pod skid. Our pod was in the junkyard, but it was buried behind ordnance skids, drop tanks, and tractors. Instead of taking the time to dig one out, we just grabbed anything we could find, which happened to be a Baker-Box. I figured the pod wouldn't be sitting long, so what harm could it do. Boy was I wrong!

Everyone knew their job, and things were going smoothly. Using a FLIR beam, adapter and a bomb hoist, we lowered the aft section down onto the Baker-Box and rolled it under the wing of an adjacent aircraft. We then chained it down, waiting for the wash job to get done.

Back down in the shop, maintenance told me that the forward section and optic stabilizer had not been received, and the pod was going to get stowed in the hangar bay, meaning we didn't have to put it back on the aircraft.

After working on other gripes and doing flight-deck drills for several hours, we finally had time to get the proper FLIR skid. A junior technician and I went up to the flight deck to transfer the pod from the Baker-Box to the skid. We unchained the pod and positioned the Baker-Box alongside the FLIR skid. We then picked up the pod to transfer it, but my co-worker lost his grip. He tried valiantly to regain his grip but was not successful.

The aft end of the pod had dropped about six to eight inches, smashing the power supply into the deck. I set the front end of the pod on the deck, made sure my co-worker wasn't injured, and assessed the situation. I was thankful nobody was hurt, and we finished the transfer, locking down the pod on the right skid.

The power supply was dented severely and had to be BCM'd.

We could have prevented this damage had we used the right support equipment from the beginning. I learned a valuable lesson that day. Maintenance shortcuts cannot be tolerated, and they can lead to unforgiving mishaps. My incident is a classic example of why we must adhere strictly to all procedures.

Petty Officer Baker works in the AT shop at VFA-113.

Overtasking Leads

By AE2(AW) David Glenn

It's essential to make sure that all the work is done, including panel fasteners, before signing off the MAFs.

It had been a long day of numerous gripes on multiple aircraft, including specials on one aircraft in the hangar bay. As a shop CDI, I had to make sure everything day check had worked on was signed off and in maintenance control's in-box before the night-check passdown. That job should have been simple.

I made a list of tasks and hit the roof to look at gripe No. 1. It was minor corrosion work and looked good, nice and clean. I was off to the next bird, saw a panel had been removed and was tacked on only with a few screws so it easily could be removed for inspection. The worker was nice enough to leave the screws loose, so I could back them off with my fingers. It occurred to me that I should have brought someone with a tool-pouch, but no time for that now. I inspected the terminal my third class had replaced, FOD-checked the compartment, and looked around the remainder of the panel for any other problems—giving it the good ol' 18-inch check.

I took note of the flight-control cables for the flaps and slats and knew QA had to look in the panel before closing it. I made a mental note to call QA when work was done, so the panel would be closed up, checked and signed off.

to Shortcuts

I was off to the next gripe, bounced around on the roof, and looked at other discrepancies. I then went down to the hangar bay to take a peak at our specials aircraft. I realized I only had a short time to get my MAFs signed off before shift change. After completing my inspections, I quickly began to sign off the MAFs on my shop's computer. I had a list in my hand and began working my way through NALCOMIS as fast as I could. I wanted to beat the AZs who were going to be doing NALCOMIS backup soon. One gripe after another flew past my eyes. The workers were kind enough to have kept most of their MAFs updated, so signing them off was a breeze, until I got to the broken terminal MAF. The worker had not signed off the MAF! I whisked through it, making sure a part was indexed, searching for the work unit code (always a pain), and then I messed up and made a fool of myself, bringing into question my integrity and inspecting abilities. I signed off the MAF without having the actual worker available who had worked on the gripe. I passed the worker sign-off to a random person sitting closest to me. The worker who had done the MAF was not in the shop. If he had been or if I had made sure he was the one who signed it off, he may have reminded me of a major detail about that gripe.

On the other hand, I may have slowed down enough to recall the mental note I had made about QA and putting that "tacked" panel back on. Well, you guessed it, that fact was forgotten totally. I signed off the MAF, didn't miss a beat in my typing tempo, and zipped onto the next MAF. I finished all my gripes in no time, made a final scan through the workload, and finished as a backup warning popped up. I beat the clock, and I was proud of myself.

My shift ended, and I headed off to bed. About an hour passed before I fell asleep and still no urgent sixth sense telling me I had messed up. To be honest, I slept pretty well that night—better than most nights.

I awoke when the 1MC screamed, "Reveille! Reveille!" The beginning of a new day, and I had watch in the ready room. I checked the shop to see how things were going and felt the tension as soon as I poked my head through the door to say hello. A fellow second class alerted me I had signed off a MAF without a panel being installed. I actually said quite casually, not hearing him correctly, "No, the flap-slat panel needs QA to look in it before it can go back on. Did you guys handle that alright?" He looked at me and said, "Dude, you signed off that MAF already, and the panel still was off when final fastener was done last night."

It was an honest mistake, but it's not one I am allowed to make. No CDI is allowed to do that. Without the MAF, people don't know the panel is off the aircraft. Another work center noticed me doing an inspection of the aircraft. My gut was knotting. This event is not just going to be viewed as a one-time thing. I had made a mistake before during an inspection. To make matters worse, it was on my CDI monitor that I had messed up. I just had received my CDI paperwork back after a 30-day suspension. A trend was shaping up, and I was not looking good.

I made a mistake and knew I might face captain's mast. The watch was one of the slowest ones ever. I repeatedly reviewed what had occurred and the specific mistakes made. I should have stayed on top of the gripes inspected throughout the day. I didn't and was rushing at the end of my shift to catch up. I should have taken a worker with me on the inspections. A second set of eyes would have helped, and it's good to have someone to do any spot work where needed. I was over tasked and didn't say anything. I simply pressured myself to get things done quickly. I just wanted to beat the clock. Multitasking is necessary in our job, but everyone should know their limits. Writing a proper passdown likely would have been a point where I had another chance to catch my mistake. I normally am very diligent about a thorough passdown, but I was tired that night and anxious to end my day.

Taking shortcuts and rushing led to shoddy maintenance on my part and a well-deserved motivational talk from maintenance control. Now when faced with multiple tasks, I delegate and make sure I'm focused on the task at hand.

Petty Officer Glenn works in the AE shop at VAQ-139.

A Kick in the Seat

By AME1(AW) Buddy Thompson

I'm an avid fan of *Mech* magazine. I find myself reading each new issue from cover-to-cover, becoming engrossed in the numerous accounts of maintenance "near-misses." Never in a thousand years did I think I ever would become the subject of a safety-related article.

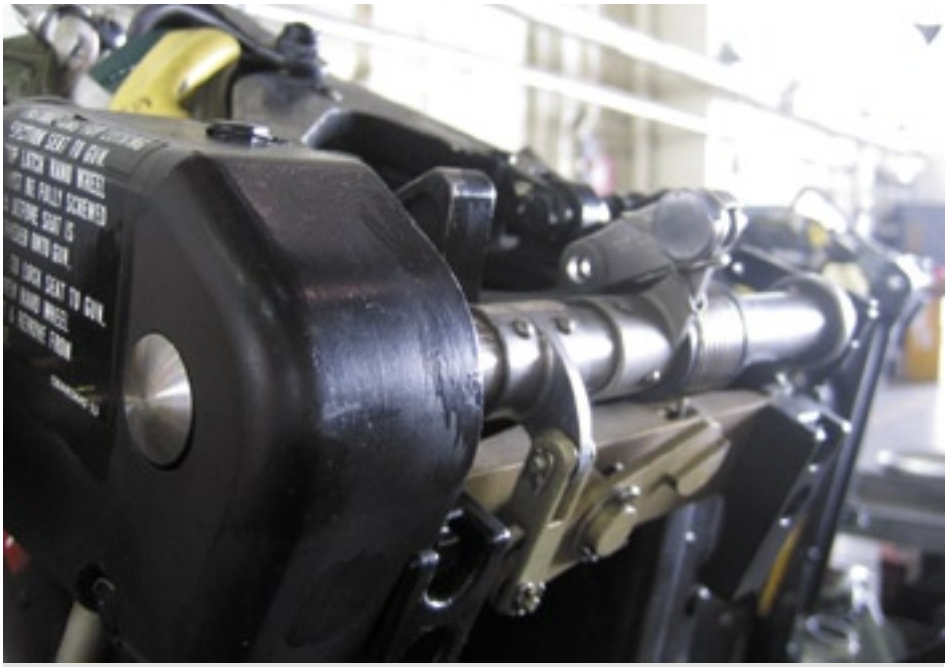
It was a pleasant, cool and rainy day at Naval Air Station Whidbey Island, home of the EA-6B Prowler. I had completed the chief's exam earlier that morning and arrived at work prepared to resume my duties as VAQ-142's AME work center leading petty officer. I read the shop pass-down log to see what was on the schedule for my team of eight Sailors. On this particular morning, the airframes shop was removing a number of flight-control rods from Gray Wolf 520. To assist them with this job, the AME shop would remove the pilot's ejection seat from the aircraft.

The necessary steps began immediately. Shop personnel gathered the required tools, while I set up the hangar deck crane. An AME2 and one of the shop's junior airmen already were on top of the aircraft, getting ready to remove the forward canopy. The AME2 was doing some on-the-job training for the younger Sailor, showing him step-by-step procedures on the correct method of removing a canopy. Using the crane, the canopy was hoisted clear of the airplane and placed on the hangar deck. During this time, I made my way onto the aircraft and sat down behind the aft cockpit to complete some last-minute tool and checklist checks. Everything up to this point had gone smoothly, and it had been by-the-book maintenance.

According to procedure, our next step called for us to "complete the checklist" for safely de-arming and removing the ejection seat. I planned on reading the checklist aloud, while my fellow AME2 completed each required action in turn. Having completed this procedure many times, we were both comfortable and familiar

with the steps involved. I climbed into the aft cockpit to begin the process, and the AME2 asked if he could start the procedure by "disconnecting something." His words didn't register with me, and I inadvertently responded, "Yes." I had answered his question, even though I wasn't sure what he had asked to disconnect. As I turned to face him and begin the checklist, he said, "I think I just messed up something." At the same instant, I heard a bang and noticed a small puff of black smoke rising from the forward cockpit. No doubt, now, that we had done something wrong.

The AME2 had disconnected the crossover shaft for the seat's time-delay mechanism, which had, in turn, fired one of the many small explosive charges on the ejection seat. I took a closer look and realized that we had not installed the safety pin on the harness-retract assembly, which is the pin that would have prevented the charge from firing. We were overconfident about our skills and knowledge, and that attitude led to complacency on our part.



When removing a seat, it's critical to do a safety check of all components and equipment.

An unpinned cartridge is a recipe for disaster.

I'm thankful no Sailors were injured during this minor but potentially deadly and very preventable mistake. Had we simply followed the checklist, which is designed to make sure the proper steps are complete before removing the seat, we would have avoided this incident. The bottom line is that maintenance publications and procedural checklists exist for a reason. That reason is safety. No matter how proficient we become with any maintenance task or how much we think we know our jobs, we must follow the pubs and checklists. If we have that focus, things won't go wrong. Unfortunately, it took a little kick in the seat to remember this valuable lesson.

Petty Officer Thompson is the AME LPO at VAQ-142.

"Comfortable and familiar with the steps." Boy, those are words that should raise a warning flag. As a retired senior chief, I'm proud this Sailor was willing to admit his mistake and that of his team. They didn't take a ride into the rafters, which has happened several times to seat maintainers. Admitting the mistake after a poor decision is great, but we need to work at preventing the mistake in the first place. Read the book, use the book, and follow the rules. Those steps will keep you out of trouble.—Ed.

Failure to Communicate

By AM2 Chad Hodges

Aircraft 530 returned from flight with a repeat gripe that my air frames shop could not trace. The four previous attempts to solve the "flaps slow to indicate" gripe had proven unsuccessful. Clearly, we were missing something, and we needed to get this one fixed.

We had replaced nearly every flap-system component with either new parts from supply or with "known good" parts from other aircraft. Now on our fifth troubleshooting attempt, we discovered the starboard flap was very snug in the 30 degree or fully extended position. Normally, an inch-to-an-inch-and-a-half play exists in this position.

This flaperon damage was avoidable. Crew resource management is necessary in the maintenance department, too!

We decided to remove the starboard flap and try one last thing: "zero out" the flap gearbox. According to our publications, we would have to "place a suitable wedge under the flaperon" to hold it in the "up" position, so we could gain access to the bolt and safety wire that secure the flaperon to the airframe. With the flaperon removed, we then could remove the flap louvers, disconnect the torque tubes, and finally gain access to the flap gearbox. To put everything back together, we would roll the flap carriage assembly up by hand until we had our proper clearance, reconnect the torque tubes to the gearbox, and finally, reinstall the flaps.

It was at this point that the process went sour. Having successfully removed the louvers, flaps, and torque tubes, I thought it finally was time to zero out the gearbox. I was thinking safety first, so I double-checked to see that everyone was clear of the flight-control surfaces. It was clear; however, I failed to do two things: Tell everyone involved that I was about to bring on hydraulic pressure and follow procedures that required having someone in the cockpit to make sure the controls were where we needed them. I really could add one other thing to that list: During my walk-around, I missed the wheel chock wedged under the starboard flaperon.

As I turned on hydraulic power to aircraft 530, the control surfaces slowly began moving toward the neutral position—as they're designed to do. I gradually applied more and more pressure to the hydraulic system. Suddenly, we heard a loud bang! My hand flew to the dual shut-off switches, immediately securing the hydraulic generator.

The ensuing inspection revealed that the forgotten or overlooked chock had crushed the flaperon. Sickened by the accident, we inspected the damage closely, expecting to find a lot more than occurred. The flaperon was the only part damaged. The most important factor is the safety of Sailors working the job, and no one had been injured.

Even though I checked and double-checked for anyone around the flight-control surfaces, my failure to communicate and follow procedures was the key factor in the whole mishap. I should have made it crystal clear to everyone that hydraulic power was being turned on. Everyone would have known not to approach the flight-control surfaces. The wheel chock would have been noticed and removed, saving time and money.

I learned a lot and lived through an embarrassing moment. With every job, no matter how small or simple, the keys to success are communication, proper planning, and doing by-the-book maintenance!

Petty Officer Hodges works in the airframe shop at VAQ-133.

Sailors and Marines Preventing Mishaps

BRAVO Zulu

Send BZs to: SAFE-Mech@navy.mil

AM1(AW) Robert Tiedemann
VAQ-130

While on a routine walk-through of squadron spaces, Petty Officer Tiedemann discovered a large pipe wrench teetering on the edge of an overhead catwalk near the hangar ceiling. He carefully retrieved the wrench, preventing it from damaging the aircraft parked directly below or causing injury or death of fellow Sailors.

The wrench was not a squadron tool, and no one external to the squadron ever claimed it. Petty Officer Tiedemann's keen observations and quick action prevented a serious event from happening.

AT3 Jeffrey Chambers
VAQ-139

During a routine maintenance download of pod hardbacks on Warcat 501, Petty Officer Chambers noticed a chafed wire bundle in the port engine bay. A closer look revealed these wires were part of a new weapon system.

The wiring was repaired, and the aircraft returned to flight. Had this discrepancy gone undiscovered, it would have caused significant mission degradation and could have caused an electrical fire.

AD2 Gabriel Ocampo
VAW-113

Petty Officer Ocampo and other members of the power-plants work center were preparing to change the port engine on Black Eagle 600. Before pulling the engine, Ocampo inspected the engine trailer and found two loose bolts on the support brace, which is located on the port aft side. He immediately notified his CDI, and the engine trailer was returned for further inspection.

As a result of Petty Officer Ocampo's action, 16 incorrect bolts were found on the engine trailer, and it was taken out of service until further maintenance could be completed. The trailer could have collapsed under an engine's weight.

AM3 Teddy Toney
HSL-42

Petty Officer Toney found a 7-inch crack in the No. 2 engine-bay door during a daily inspection of an SH-60B. The crack was located on the bottom edge of the door, was not visible from the deck, and was impossible to see once the door had been opened. Since the door is constructed of composite material, Petty Officer Toney suspected the crack might be under the surface of the paint. He continued to look and found the crack extended into the hinge-plate area. He then immediately notified his LPO.

Had this crack progressed in flight, it could have resulted in the door departing the aircraft, causing catastrophic damage.

AD3 John Robinett
VR-61

Petty Officer Robinett completed a routine daily and turnaround inspection on a C-9B. Although no discrepancies were noted, he continued to look around the inspection area, using the 18-inch rule. He suddenly noticed the fuel-shroud drain lines looked chafed. Robinett notified his supervisor, maintenance control, and quality assurance.

A QA inspection of four aircraft found two had holes in the drain lines, and two were chafed severely. Petty Officer Robinett's find prevented a possible explosive hazard in all C-9Bs and DC-9s.

AM3 Johnrae Deguzman
HSC-28

While inspecting Bay Raider 43, Petty Officer Deguzman found flaking in the swashplate guide on the main rotor head and downed the aircraft until repairs could be completed.

Subsequent inspections revealed that the swashplate guide was defective and required immediate replacement. As a result of Petty Officer Deguzman's discovery, a critical flight component was replaced before possible structural failure.

AD3 Danny Figueroa
VAQ-133

At Bagram Air Field, Afghanistan, Petty Officer Figueroa was completing an engine change on aircraft 530. He prepared for an engine installation, took out a bushing and castellated nut from a MAF bag, and began to install the aft-engine hoist swivel. Just then, as Petty Officer Figueroa began to attach the nut, he noticed it was cracked. The nut easily would have stripped off, allowing the engine to separate from the mount.

Petty Officer Figueroa then removed the nut and presented his findings to maintenance. His actions saved time, prevented a possible mishap, and revealed that a $1.6-million-dollar engine is indeed held in place by a 49-cent castellated nut.

AM2(AW) Raunel Vences
VFA-87

While doing a serial-number verification on War Party 404 for transfer to NADEP Jacksonville, Petty Officer Vences noticed a hairline crack in the planing-arm assembly on the starboard main-landing gear. Although the transfer inspection does not require inspecting this mechanism, Vences took the extra effort and found what would have led to the failure of the starboard gear upon landing.

AOAN William Turner
HS-3

Airman Turner noticed what appeared to be grease in the area around the quick-disconnect for the viscous-dampener bearing assembly in the tail rotor. He investigated further, found the bearing had failed during the previous flight, and verified it was damaged severely.

Airman Turner's keen attention to detail led to the discovery of this critical safety-of-flight problem, which easily could have been overlooked.

AD3(AW) Rafael Griffin
VP-16

On a routine daily inspection of a squadron P-3C, Petty Officer Griffin noticed the No. 4 ignition relay was hanging by the cannon plug. After notifying maintenance control of the discrepancy, he inspected further, finding the casing had separated from the mounting pad.

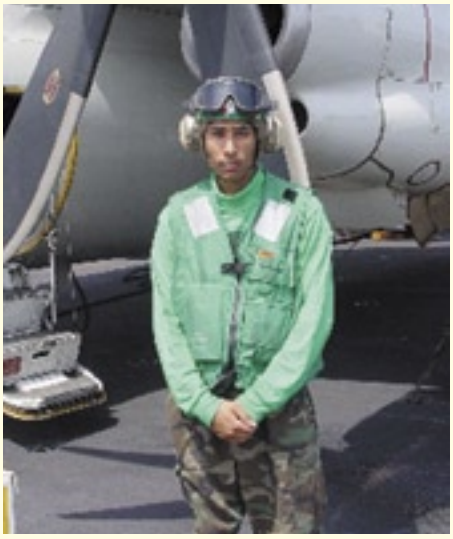
Petty Officer Griffin's attention to detail prevented the catastrophic failure of the engine and further damage to the aircraft.

AD2 Brett Hopkins
VAQ-139

Before a late night turn on aircraft 500, Petty Officer Hopkins saw several new, microscopic impact marks on the first-stage compressor blades of the starboard engine. After notifying maintenance control, the engine was borescoped, and no other damage was found.

Had this damage not been discovered and blended, compressor-blade cracks would have formed at the original impact points, leading to blade separation and catastrophic in-flight engine failure.

AEAN Shamene Jones
VAW-121



Airman Jones was standing prop guard on COD 46, which was parked near the fantail and about two feet from aircraft 600. When the plane captain passed control of the plane, the yellowshirt gave the signal to pull chocks and chains. Airman Jones noticed two blueshirts running toward the turning props to grab the chocks. He quickly stopped them and directed them around the props and away from harm's way. His quick thinking and alertness prevented certain disaster and saved two shipmates.

AE2 Amy Gunter
VFC-12

While chaining down Ambush 03 for a maintenance turn, Petty Officer Gunter saw that the head of the forward attachment bolt that connects the landing-gear crank assembly to the planing link had sheared. She notified maintenance control and downed the aircraft.

Had the sheared bolt gone undetected, a planning-link failure could have occurred at any time, causing a major mishap

CROSSFEED

Maintenance Officer
LCdr. Bert Ortiz
bert.ortiz@navy.mil

Editorial Coordinator
AMC(AW) Paul Hofstad
paul.hofstad@navy.mil

Airframes

Reaffirming Basic Hydraulic Rules

By AMC(AW) Paul Hofstad

In the last six months, we've noticed a bad trend in sampling procedures. In some cases, the problem is a misinterpretation of the NAVAIR 01-1A-17, local MIMS, and type aircraft MRCs. When commands interpret too much, they lose the ability to maintain an effective aircraft hydraulic-control program.

NAVAIR 01-1A-17 states samples will be taken after extensive maintenance or crash/battle damage, when a metal-generating component failure has occurred, when erratic flight-control function or hydraulic-pressure drop is noted, when repeated or extensive system malfunction occurs, any time the system is subjected to excessive temperature, or in any other instance when contamination is suspected. Paragraph 5-7 states, "Hydraulic-system fluid sampling shall be accomplished on a periodic basis in accordance with applicable MIM, MRC, and rework specifications."

The last reference brings up a good point. If your command does samples on acceptance and transfer inspections only, then an aircraft may not get sampled for one, two, or even three years, depending on its rework schedule. In this case, wings should get involved and set a realistic schedule.

Another point to think about is logging and tracking samples. I have reviewed many trend logs in the last two years, and I've noticed inconsistencies in logging samples. If you make a mistake entering a sample, don't "white it out." Cross it out with one line, provide a small explanation like "wrong system" or "wrong aircraft," and then initial it. Also, make sure it's accurate. The trend log should give anyone who looks at it a reasonable idea of the aircraft's history. After all, that's one purpose of the trend log. More importantly, the log ensures the hydraulic systems are in good order and safe for the aircrew to operate the aircraft.

Incredibly, I have seen cases where an aircraft has gone years without samples. When I researched NALCOMIS, I found that many components had been changed in that time, including flight-control actuators, wheel assemblies, reservoirs, and hydraulic pumps. One of the key problems with this lack of valid testing is that we are teaching our future leaders the wrong process. We need to show our young CDIs how to make the right call on when to take a hydraulic sample. This step is critical because we don't want them to make a rushed decision just to make a launch or because of fear of reprisals. They need to make the right decision based on maintaining a fully functional hydraulic system.

I recently asked some airframers why they hadn't taken samples when they changed a hydraulic pump. Their answer was shocking, "Oh, we were in Afghanistan on that one, Chief; we didn't take a sample because we had jets to get back in the air." We have to do a better job. It begs the question: Are we good or lucky? When we leave such a critical decision up to the interpretation of a manual, we better get it right.

Chief Hofstad is a maintenance analyst at the Naval Safety Center.

Respirator

Who Owns the Respirator Program?

By AMC(AW) Paul Hofstad

I've discovered a trend that shows how important it is to take ownership of your programs, specifically the respiratory-protection program manager (RPPM).

The CO designates a person in the command as RPPM, meaning that person has the command and respirator wearer's full trust. At this point, the newly designated RPPM should assume full responsibility and ownership of the program. Is that easier said than done? Not really. One of the first actions should be to make sure all references are up to date. Two recent changes have occurred to RPPM instructions, yet 75 percent of the commands I've looked at were not aware of them.

In December 2005, OPNAVINST 5100.23F changed to the .23G. In May 01, 2006, CNAF 4790.2 had its first change. Volume 1, Chapter 10, Section 10.3.1 has three pages of changes affecting RPPM, hazmat and corrosion. In most cases, QA is aware of the changes, but the changes have not made it to the shops, or the CTPL is not verifying these changes have been made in the work center.

OPNAVINST 5100.23G, 1513(8) states the RPPM will do an annual audit of the program. This paragraph does not state that a QA, wing or even a Safety Center review will suffice. It specifically states that the RPPM will do this audit.

It's at this point that ownership enters. Who knows the program better than the RPPM? Unfortunately, only a couple of commands I have looked at actually had done an RPPM audit. Their programs looked great and reflected pride.

Commands who take ownership have an outstanding program 100 percent of the time. They stay on top of their program, making upkeep easy. Those who don't take ownership normally have a litany of discrepancies. For them, trying to fix the program and stay on top of it may seem futile, but it's a job that must be done. Maintainer's lives are at stake.

Chief Hofstad is a maintenance analyst at the Naval Safety Center.

Oil Analysis

Oil and the Lab Rats

ADC(AW/SW) Gary Eldridge

Oil analysis is a critical part of aviation maintenance and a few tips will make sure the fleet uses the system correctly.

The Joint Oil Analysis Program (JOAP) was established as a combined effort to maintain a standard program that would consolidate and coordinate the service's oil-analysis programs. The oil-analysis diagnostic programs allow us to make sure fluids are suitable for use in aeronautical and non-aeronautical engines, transmissions, gearboxes, and other components.

The Navy Oil-Analysis Program (NOAP) defines the policies, procedures, and responsibilities for maintenance programs throughout the Navy. The NOAP is part of and operates in compliance with the JOAP. Oil Analysis laboratories are located at AIMDs and SIMAs.

The oil analysis operator-evaluator analyzes

used lubricants and hydraulic fluids, evaluates the condition of the fluid or the end equipment that it came from, and recommends maintenance actions to the equipment-operating activity.

This information sounds good, but I've noticed a few problems recently and put together a list, with the aid of William Zdrojewski (an oil-lab NATEC rep), to make sure your lab is in good shape.

1. PPE is critical. One type of glove is not always compatible for every chemical in an oil laboratory. Neoprene, nitrile, butyl rubber each have their use in our oil labs. Our labs use methanol, toluene, and potassium hydroxide. Some laboratories have nitric acid for cleaning generators or Aquatest 2010. Sodium hydroxide also is used. The oil lab should have a list available stating what PPE is necessary for each hazard present.

2. Fume hoods should be checked annually for flow rate, maximum sash height, and proper operation. Maximum sash height should be marked clearly. The on/off switch should be identified. No equipment, other than what you're working on, should be in the fume hood that will hinder proper flow through the hood. An indicator, such as a vaneometer, should be used to indicate that hood is on, and a flow of air should exist up and out through an exhaust.

3. Propane tanks are used to do flashpoint testing. Tygon tubing (or other plastic or rubber tubing) should not be used to connect tanks to flash-point equipment. These lines should be stainless steel or copper tubing and must be "hard plumbed" in. Propane tanks should be of the type authorized, and they need to be hydrostatically tested at least once a year. A spark arrestor should be inserted in the line between the tank and the tester.

4. Waste containers should be marked to indicate what is in them. Should a fire occur in a space, firefighters need to know what they are dealing with in the compartment.

5. All chemicals and containers should be marked to indicate what is in them.

6. Good lighting is important and most oil laboratories are too dim.

7. An eyewash station should be nearby.

8. A safety shower should be nearby.

9. Flammable liquids should be stored in a flammable locker?

The key to a successful oil lab is to monitor and diagnose the condition of equipment or chemicals in the lab. Remember, think safety and always practice what you preach when doing any job that involves chemicals because it can affect your life.

Chief Eldridge is a maintenance analyst at the Naval Safety Center.

AVGFE

Confined-Space Entry, New Name With Same Risks

By AMC(AW) Paul Hofstad

Last year, I wrote an article titled, "Gas-Free Engineering, It's Still There." Its purpose was to answer a host of questions that the fleet often asks. I've collaborated with our AME and AD analysts to address more questions and phone calls received concerning confined-space entry. Please note, however, that we do not set policy on aviation maintenance. We do provide advice on those policies. NAVAIR, AMMT, and wings should be contacted when addressing questions concerning policy.

We have received several questions about the NAVAIR-01-1A-35: Aircraft Fuel Cells and Tanks. The main source of confusion is the definition of "hands/arms/tool-in" maintenance procedures, and the need for an entry authority (EA) to issue a gas-free certificate.

When an aircraft's fuel cell is so small that a person can fit in only arms and hands, the initial lower explosive limit (LEL) checks only are required for a Class 5 Permit—see NAVAIR 01-1A-35 WP 00400, pgs. 16 and 17, paragraphs 70 through 81 for more details. If a person's head enters a cell, a gas-free certification still is required to be updated periodically.

A caveat to this requirement does exist: For hands-in/tool-in maintenance, the specific steps in NAVAIR 01-1A-35, paragraph 71 and subsequent sub-paragraphs must be accomplished. Specifically, the book says, "Safety procedures, including specifying the PPE, explosion-proof equipment, etc., shall be specified in written maintenance procedure for the TMS. Before maintenance begins, the level of fuel shall be lower than the area in which maintenance is being conducted. Disconnect electrical power and batteries. Do not perform hot work. Do not perform concurrent maintenance. Post a fire watch and comply with all electrostatic-discharge requirements in accordance with procedures identified in the 35 manual."

With publication changes also comes confusion, which now has occurred. If maintenance personnel lose focus of the hazards of working in an open fuel cell, they are a spark away from disaster. Our program managers must make sure their people adhere strictly to instructions and publications. They also must make sure the right documents are maintained, which will help mitigate the risks associated with open fuel cells.

If personnel don't use good judgment and don't follow safety procedures, the tiniest spark can result in catastrophic damages. Five personnel lost their lives in an explosion while doing fuel-cell maintenance on an E-2C. They did not do LEL checks, and a simple spark from an unauthorized maintenance light killed them in an instant. We need to protect our folks to prevent repeating this tragedy.

Chief Hofstad is a maintenance analyst at the Naval Safety Center. AMEC(AW/SW/NAC) Ellen Darby and ADC(AW) Gary Eldridge assisted with the article.

Class C Mishap Summary

By AMC(AW) Paul Hofstad

From April 01, 2006, to June 30, 2006, the Navy and Marine Corps had 25 Class-C mishaps that involved 28 aircraft. The damage total was $2,289,510. Twenty-four of the mishaps still are under investigation, leaving just one mishap to discuss.

The mishap in question is one we see each quarter: damage to an aircraft that occurred during an aircraft move—this one returning from high power. The facts may sound familiar, and it occurs when steps are missed while preparing to tow an aircraft.

The mishap line leading petty officer (MLPO) directed the mishap tow-tractor driver (MTD) and mishap brake rider (MBR) to proceed to the high-power area with a power cart. When done with the turn, he instructed them to bring the mishap aircraft back from the high-power area and park it on the squadron line. The MLPO had been in the shop for approximately two weeks before the incident. He asked the MTD and MBR if they had been to the high-power area in the past, and they said they had. Upon arrival at high-power spot No. 2, the MTD and MBR positioned the power cart slightly in front of the starboard engine, applied electrical power, and completed the high-power turn with the turn crew. Everyone helped to break down the aircraft, placing the chains on the tow tractor.

They then called maintenance to request a "follow-me truck." The MTD and MBR discussed the hazards of towing the aircraft around the power cart, which still was in front of the starboard engine. They ultimately decided to position the tow bar to the left of the aircraft's nose, allowing the aircraft to move around the power cart. The follow-me truck arrived about an hour after the initial request. Once clear of the power cart, the MTD made a right-hand turn to pull in behind the follow-me truck.

At this point, an aircraft was taxiing from the NADEP line and appeared to be on an intercepting course with the squadron's aircraft, according to the MTD. The tow-tractor driver increased his turn to avoid what he felt was an impending collision. Focusing attention on avoiding the taxiing aircraft and pulling in behind the MFT, the MTD looked back and realized the MA had struck an object. He backed the aircraft off the obstruction and signaled to the MBR to hold brakes. The rest of the move went without incident.

I have only one question: Why didn't anyone simply move the power cart out of the way? We can't always predict what our Sailors are going to do, but we can teach them to expect the unexpected and to plan for contingencies. That approach doesn't always solve the problem, but this case seems simple. Our people were too lazy to take care of the gear before it became a problem. The power-plants leading petty officer, who was on the scene, should have taken charge and provided basic functional leadership over the folks involved in the move. This incident cost us $89,797.

Chief Hofstad is a maintenance analyst assigned to the Naval Safety Center.

2006: Class C Summary in Review

By AMC(AW) Paul Hofstad

Already during FY06, there have been 102 Class-C mishaps that involved 111 aircraft. More importantly, six of those mishaps involved injury to personnel, resulting in 21 lost workdays. The following summary provides a breakdown of the top six causal factors for Class C mishaps around the fleet:

1. Fifteen of the mishaps involved aircraft under the positive control of aircrew, maintenance personnel or yellowshirts that were taxied, towed, or directed into other objects, such as aircraft or buildings. Equal blame can be shared because aircrew and maintenance personnel (squadron and yellowshirts) had instances when they lost focus on the aircraft or got in a hurry.

2. Ten of the mishaps resulted from things falling off aircraft, better known as TFOA. These items ranged from engine-bay doors to cowlings. In a couple of the mishaps, pieces hit and damaged the aircraft before falling to earth.

3. Support equipment is third on the list, damaging eight aircraft. The causes ranged from a piece of gear not being tied down to maintainers towing the gear into aircraft.

4. Foreign object damage (FOD) is tied for third. About 50 percent of the FOD incidents were from objects departing the aircraft and being sucked down the intake during takeoff or in flight. One of the FOD mishaps is worth mentioning because it directly involved maintenance personnel. A technician got too close to the intake and felt a tug on his head. The lenses from his goggles were sucked off his cranial and went straight down the intake—just a little too close for comfort.

5. In five mishaps, seven sub-components were jettisoned from aircraft, including three drop tanks and two canopies. Neither of these incidents happened in flight: One was during a pre-flight inspection and the other on post-flight inspection.

6. Four F-18 canopies were destroyed as a result of the exhaust from other aircraft. Advances in technology certainly have made the maintenance person's job easier in the last 10 years or so, but it's not without cost. As with anything new, we have to learn its characteristics and capabilities. This problem will take concerted effort to control.

This list shows that we still have FOD, TFOA and SE issues. With the advances in technologies, we pay a hefty price when one of our assets is damaged. More than 50 of the Class C mishaps were in the group described, which is half of this year's total. Most of these mishaps occurred because of direct maintenance errors, and the Navy and Marine Corps shelled out $6,445,376 in repair costs on these Class C mishaps alone. Maintainers are doing a good job, but we can do better. Commit to excellence.

Chief Hofstad is an Airframes Analyst and the Crossfeed Coordinator for the Naval Safety Center.

Helping Sailors and Marines Help Themselves

Sierra Hotel

Commander, Naval Safety Center would like to thank the following aviation commands for their recent participation in safety surveys, culture workshops, and maintenance malpractice (MMP)/khaki risk management (KRM) presentations for the months of May-August.

Safety Surveys

VFA-94	VAQ-138	VFA-105	HSL-49
VFA-125	VAQ-142	VFA-81	HS-6
VFA-122	VP-40	VR-52	HSC-85
VFA-14	VAQ-141	VR-64	VMFA-121
VFA-41	VAQ-135	VR-1	HMMT-164
VQ-1	VR-61	VR-48	HMLA-267
VQ-2	VAQ-129	HSL-45	HMT-303
AIMD Lemoore	AIMD Oceana	AIMD Willow Grove	

MMPs/KRMs

NAS Lemoore	MALS-12	VQ-1	57th Wing, Nellis AFB
VFA-27	NAS Fallon	VAQ-135	VR-52
HSL-51	NAS Atlanta	VAQ-129	HX-21
VFA-102	AMO School	VQ-2	HSL-45
VAQ-136	VR-1	VAQ-141	HSL-49
VFA-192	CNATTU Oceana	AIMD Whidbey Island	VRC-40
HS-14	VP-40	VR-61	HMM-774
VAW-115	VAQ-130	VAW-124	

Culture Workshops

HMLA-775	HMH-769	VFA-32	VMFA-112
HS-5	VMGR-234	VX-9	HMH-461
VAW-126	HMH-464	VT-35	VMFA-122
VFA-14	HMM-774	H&HS Yuma	HSL-44
VFC-12	VMFA-115	VMA-211	VFA-105
VT-31	HMH-466	HSC-28	VFA-25
NASA Air Ops Division	VAW-120	VP-69	VFA-204

For more information or to get on the schedule, please contact: Safety Surveys: Capt Chris Foley, USMC at 757-444-3520 Ext. 7223, MMP/KRM: AEC Matthew Cooper at 757-444-3520 Ext. 7275, Culture Workshop: Cdr. John Morrison at 757-444-3520 Ext. 7213.


Broken bones and lacerations heal over time,
but head injuries can be much more serious.
Wear your cranial. Do it for yourself
and for your loved ones.
www.safetycenter.navy.mil
Poster idea by VAQ-140